



# Preparing for the Carbon Constrained World

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California Public Utilities  
Commission

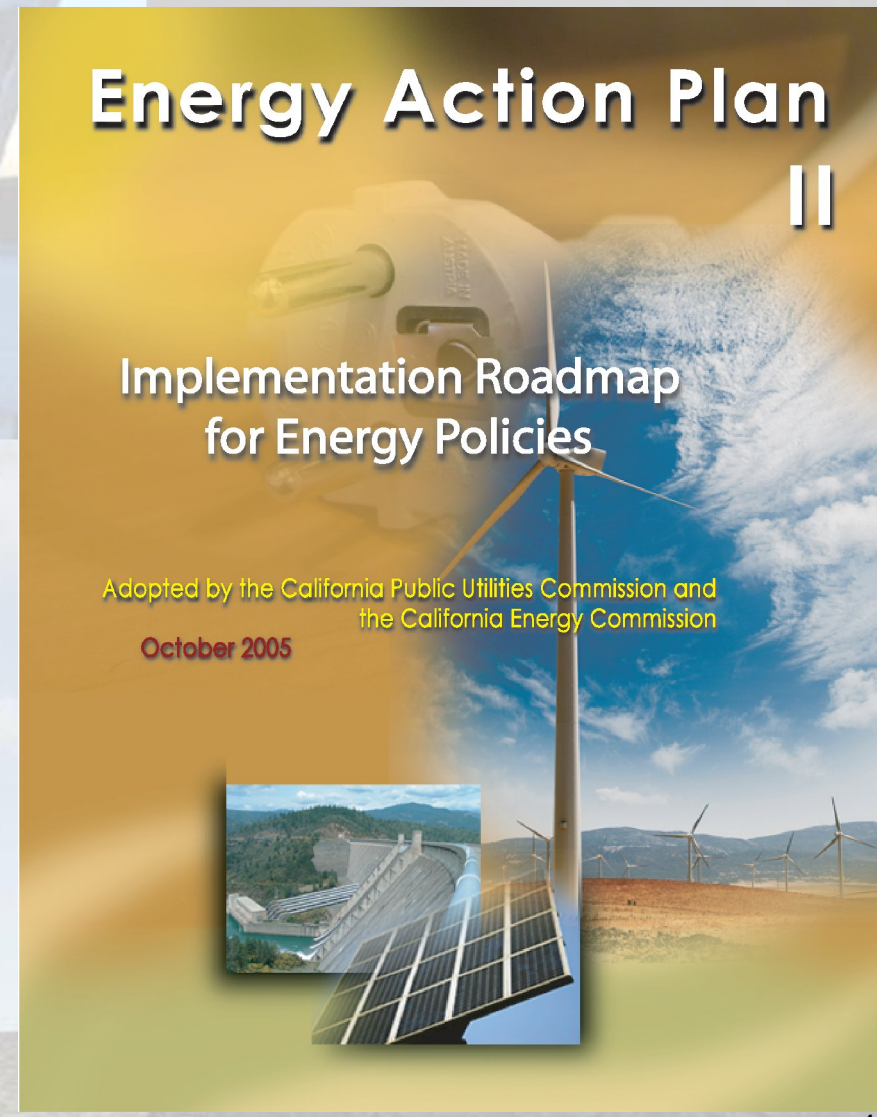
<http://www.cpuc.ca.gov>  
March 13, 2007

# The Foundation of a Low Carbon Future

“Loading Order” of preferred resources:

1. Energy efficiency and demand response
2. Renewable generation
3. Cleanest available fossil resources

Utility procurement plans must reflect the Loading Order



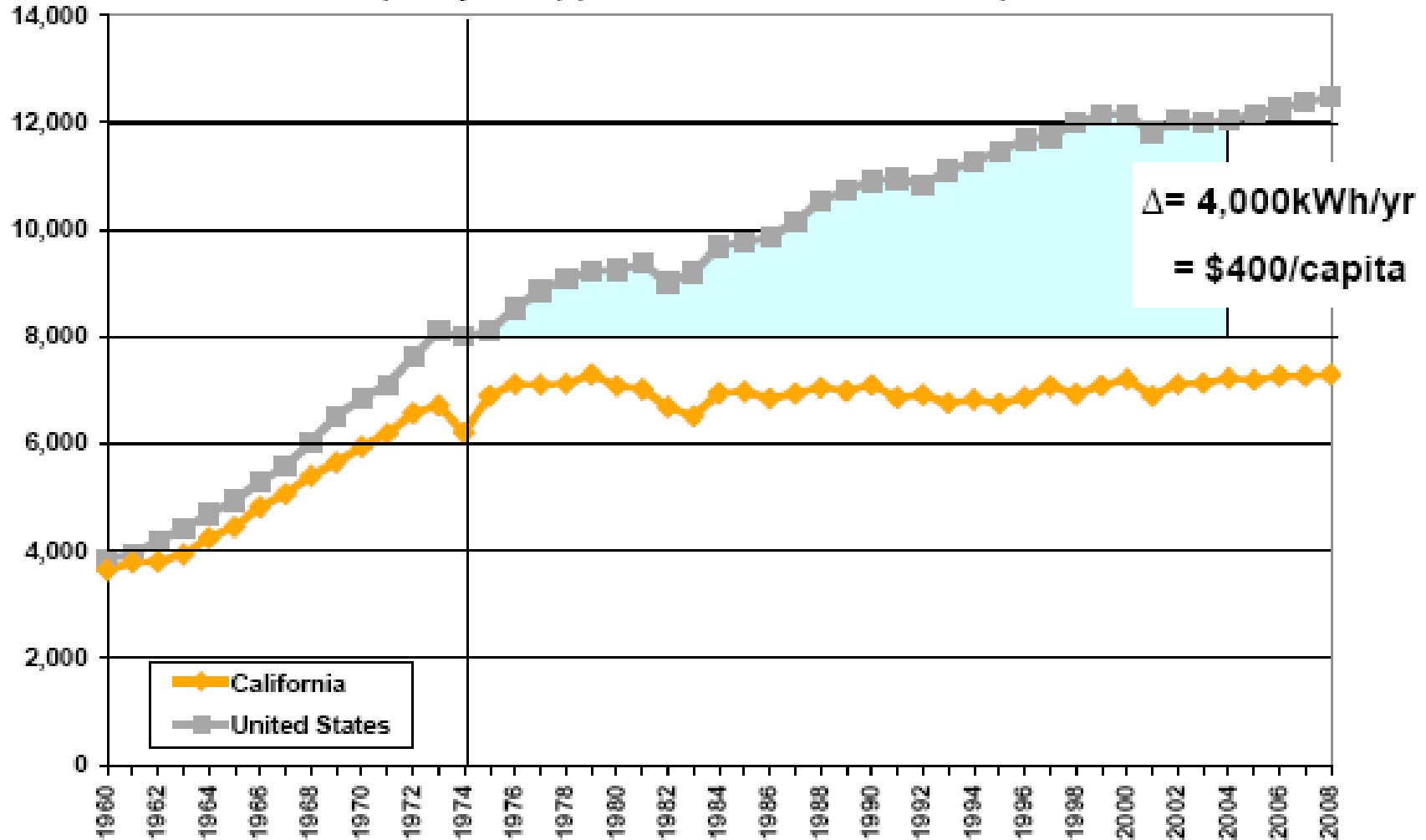
# Resource No. 1: Energy Efficiency

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- 2004-2013 Resource Goals: 23,283 GWh and 5,000 MW
  - Eliminates need for 10 new power plants
  - Eliminates 9 MMT CO<sub>2</sub> (equal to 1.8 mill cars)
  - \$10 billion net savings
  - Additional funding for low income consumers
- Key Elements:
  - Utility profits decoupled from sales in 1982
  - Three year program funding
  - Majority of funding from utility procurement dollars

# Energy Efficiency Trends

Per Capita Electricity Sales (not including self-generation)  
(kWh/person) (2005 to 2008 are forecast data)



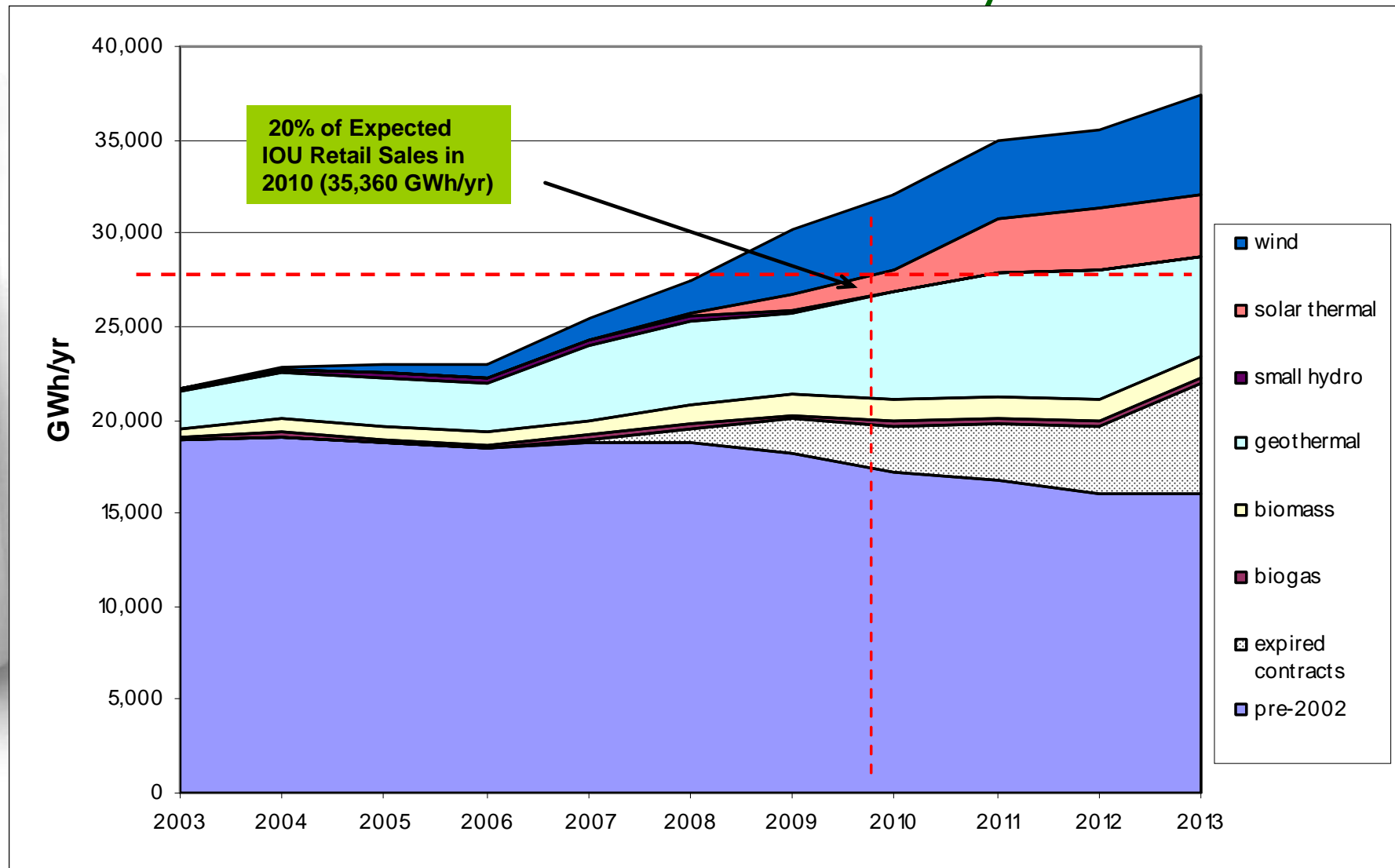
# Demand Response

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- Over 2,600 MW or 5% of load enrolled
  - Critical Peak Pricing
  - Demand Bidding Program
  - Interruptible tariffs and programs
  - Air Conditioner Cycling
- Marketing/Customer education programs  
[www.flexyourpower.org](http://www.flexyourpower.org)
- Advanced Metering Initiatives
  - Pacific Gas & Electric Co. - \$1.68 billion
  - San Diego Gas & Electric - \$635 million



# Preferred Resource No. 2: 20% Renewables by 2010



# California Solar Initiative

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1940 MW with \$2.17 billion by 2017

- Policy Goals:
  - Make rooftop solar cost effective
  - Improve technologies
  - Enhance efficiency or performance
- Upfront and Performance Based Incentives
- Minimum of 10% for low income households
- \$50 million for research, development and delivery

# Resource No. 3: Cleanest Available Fossil Fuel Generation

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## Emissions Performance Standard for new baseload resources

- Standard set at 1,100 CO<sub>2</sub>/MWh
- Applies to:
  - New utility owned generation resources
  - new or renewal contracts of five years or longer
  - Investments in retained generation that increase rated capacity or extend the life of the plant for more than 5 years



# Emissions Reductions From the Electricity Sector

State-wide Electricity Sector Strategies Climate Action Team Report March 2006	GHG Savings (MMT CO <sub>2</sub> )	
	2010	2020
Energy Efficiency Programs	5	21
Renewable Portfolio Standard	5	14.2
California Solar Initiative	0.4	3
Combined Heat and Power Program	1.1	4.4
Emissions Performance Standard	4.6	11.7
State Appliance Energy Efficiency Standards	3	5
State Building Energy Efficiency Standards	1	2
Green Buildings Initiative	0.5	1.8
Total Potential Reductions	24.6	63.1

See, [http://www.climatechange.ca.gov/climate\\_action\\_team/reports/index.html](http://www.climatechange.ca.gov/climate_action_team/reports/index.html)

# Looking to the Future

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- New Technologies
  - \$2.4 to 2.9 billion invested in clean energy in 2006
  - Energy Biosciences Institute at U.C. Berkeley and U. of Illinois
  - BP Carbon sequestration project
  - California Clean Energy Fund
- Low Carbon Fuel Standard
- Huge untapped potential in electricity sector
  - 33% RPS by 2020
  - Energy efficiency and water conservation